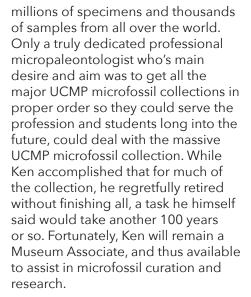
# UMPNews

Newsletter of the University of California Museum of Paleontology









Written by Jere Lipps





Ken Finger, a kid from New York City, was introduced to paleontology at State University of NY, Stony Brook, in the early 1970s. Wanting to do a PhD in paleo, he was accepted to the new paleobiology program at UC Davis in 1972. There he started an MA thesis on foraminifera from the active Antarctic volcano, Deception Island, which was judged by his committee to be so good that with a little more work he could turn it into a PhD dissertation. He did that, and graduated in 1976. In that same week, he got married and received a job offer as Exploration Paleontologist at Chevron USA, New Orleans. Three years later, he was promoted to Senior Research Geologist at Chevron Oil Field Research Company in La Habra, CA. While in Southern California, Ken also worked in mitigation paleontology and taught geology, paleontology, and oceanography at local colleges.

His research position at Chevron allowed him to begin his long career in publishing critical papers on microfossils. His dissertation was published in 1981 with J. H. Lipps

on "Foraminiferal decimation and repopulation in an active volcanic caldera, Deception Island, Antarctica" in Micropaleontology. Ken continued his record publishing rate of at least one paper almost every year since 1981 for a total of 56 peer-reviewed papers, 4 books and scads of abstracts, mostly on foraminifera, but also on other groups of microfossils (diatoms, silicoflagellates, calcareous nanoplankton, and invertebrates: ostracods, barnacles, polychaetes, chitinozoa). His focus was not just on the fossils but on biostratigraphy, isotope geochemistry, tectonic settings and paleoenvironments. In this role, he emerged as the foremost expert on American West Coast Miocene foraminiferal biostratigraphy from Chile and north to California. Ken's papers were well known as thorough, detailed, carefully designed, abundantly illustrated, and among the most useful of works.

From 2002 to 2017, UCMP was fortunate to have Ken (and his research programs) as Senior Museum Scientist & Manager of the extensive microfossil collection of



Director's

I write to you as the new year begins: classes and seminars will soon start, and our new graduate students will learn how to use the collections, beginning their new path as future UCMP alums! Sadly, our collections will be a little bit quieter with the retirement of Ken Finger after 15 years of deep service to UCMP, adding order to our vast microfossil collections - fortunately his contributions will not go unpunished, with Jere Lipps leading the celebration of Ken's career at our first Fossil Coffee of the year.

Over the summer many have been in the field (including yours truly who found the first ever living specimens of a species of infaunal echinoid, a cassiduloid, that was only known from dead tests), Erica Clites has been consolidating the NSF multi-institutional EPICC digitization project that now begins the 3rd of its 4 years, and we are excited to have just hired Cristina **Robins** on San Francisco Public Utility Commission's (SFPUC) dime as she reopens the fossil preparation lab so that we can process fossils coming from the Calaveras Dam site. And while **Lisa White** was teaching teachers on an IODP Expedition in the Equatorial Pacific, Jessica Bean has been forging relationships with HHMI, NOAA, Google, and others as our Understand Global Change web resource nears its launch, with funding coming in part from a very generous \$100,000 gift from an anonymous donor. On the Berkeley campus, we now have inspired leadership dealing with the budget challenges, but our State funds continue to dwindle. However, recent gifts have all but secured our ability to support our graduate student research (thanks to all that have given), and so now I am turning my long-term planning to securing the funds needed to maintain our exceptional collections and education and outreach staff - a daunting task, but one we must face head on if we are to secure and continue building on UCMP's legacy.

> Sincerely, **Charles Marshall**

#### Who is UCMP?

**Director:** Charles Marshall

**Assistant Directors:** 

Mark Goodwin

Lisa White

**Curators:** 

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Jere Lipps\* Cindy Looy Charles Marshall Kevin Padian Leslea Hlusko David Lindberg\*

James Valentine\* **Curatorial Associates:** 

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Roger Byrne

Lynn Ingram Admin. Assistant:

Chris Mejia

**Museum Scientists:** 

Ken Finger Erica Clites Diane Erwin Patricia Holroyd

**Education & Public Outreach:** 

Helina Chin Jessica Bean Trish Roque Anna Thanukos

Edited by Lisa White Layout & graphics by Helina Chin For the broader UCMP community, visit the UCMP website: www.ucmp. berkeley.edu; Understanding Evolution: www.understandingevolution.org; and Understanding Science: www.

understandingscience.org

\*Emeritus/a

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Please provide your email address to Chris Mejia at cmejia@berkeley.edu

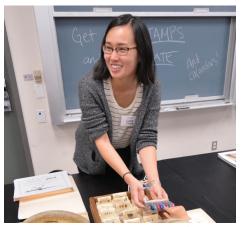
# Student Awards, **Honors & Updates**

**Jeffrey Benca** has won this year's Louderback Award in paleontology. The Louderback Award is given annually to one or two students in paleontology and in Earth science. Recipients exemplify the values of scholarship, teaching and leadership set by the venerated Professor George D. Louderback. Jeff is implementing studies of living plants to test hypothesized drivers of mass extinctions and environmental changes in the deep past.

Lucy Chang completed her dissertation this summer and is now a Peter Buck Deep Time Postdoctoral Fellow, a two-year research fellowship with dedicated time for advancing

science education at the Smithsonian. Her time will be split 75% research, 25% education with funds provided by the Smithsonian Deep Time Initiative. She will continue research tying morphology to patterns in origination and extinction using their incredible collection of Cretaceous ammonites.

Sara ElShafie was awarded the Charles A. and June R.P. Ross Graduate Student Research Award from the GSA, for research on the "effects of climate changes on the earth's inhabitants through geologic time." She received a Graduate Student Research Grant from the Evolving Earth Foundation and was selected to attend the National Communicating Science Conference, the "ComSciCon," in June.



Graduate student Lucy Chang at Cal Day. Photo by Jun Lim.

Incoming graduate student, Sara Kahanamoku-Snelling was awarded a prestigious NSF Graduate Research Fellowship. A 5-year award, Sara comes to the UCMP from Yale and will begin in fall 2017.

...continued on page 7







# Faculty in the Spotlight

Left:Julia Sigwart (UCMP) and Nurulafifah binti Yahya (Universiti Malaysia Terengganu) discuss the identification of a mollusc. Right: Jun Lim, Daniel LaTorre, Seth Finnegan, Ivo Duijnstee, Peter Kloess, Dave Smith, Franziska Franeck, Mackenzie Kirchner-Smith, Cindy Looy, Richard Stockey, Emily Orzechowski at Berlin-Ichthyosaur State Park. Photo credit Jun Lim.

A two-volume set of transcribed interviews of **Bill Clemens** and his former students were presented to Bill during UCMP's weekly "Fossil Coffee" seminar at the end of the spring semester. The Clemens Oral **History** volumes include interviews from Bill's students and colleagues including Bill's first PhD Student Jay Lillegraven (Univ. of Wyoming) at Univ. of Kansas to his last Greg Wilson (Univ. of Washington) at UC Berkeley. Paul Burnett of the Bancroft Library's Oral History Center was the interviewer and lead archivist on the project. At Fossil Coffee, he provided an overview of the project's uniqueness while previewing videos of both Bill and the interviewees. In the near future, the video transcriptions and excerpts of videos will be hosted on the UCMP website. We thank Bill, the Clemens family, and the many donors who generously contributed to the project.

**Seth Finnegan** was recently awarded a new NSF grant: Pleistocene to Recent Environments and Species Distributions on the California Coast together with UCMP Postdoctoral Scholar **Jessica Bean**.

Charles Marshall continues to challenge the biological community to properly integrate our paleontological knowledge into their analyses of current biodiversity, most recently with a paper entitled "Five paleobiological laws needed to understand the evolution of the living biota", published in Nature Ecology and Evolution (2017; 1: 0165).

**Cindy Looy** received a new NSF Collaborative Research grant entitled:

A Unique Window into the Ecology of Cretaceous Forests during the Rise of Angiosperms. The grant will further the research of Cindy and graduate student **Dori Contreras** on exceptionally preserved fossil floras. The grant will also support a new public exhibit on the 2nd floor of the Valley Life Sciences Building.

At the southern tip of peninsular Malaysia, a sea grass meadow and world marine biodiversity mega hotspot, **Julia Sigwart** (UCMP Visiting Scholar) and colleagues from Malaysia and Japan recently led a training workshop in molluscan taxonomy. Participants included graduate students and junior faculty from universities across Malaysia and Singapore, as well as several members of an environmental kids club that is developing ecotourism with local youth.



Jere with Professor R. Nigam and his students in their lab complex at the National Institute of Oceanography, Goa, India.

During February and March, Curator and Professor Emeritus **Jere Lipps** gave six lectures, from "PaleoParks", extinctions, and astrobiology at universities, institutes and paleontological laboratories in India. He spoke at the annual meeting of

the Palaeontological Society of India at the Wadia Institute for Himalayan Geology in Dehradun, at the Birbal Sahni Institute of Palaeosciences in Lucknow, in Varanasi at the Baranasi Hindu University, at Pune University, and the National Institute of Oceanography in Goa where he also visited Professor R. Nigam, an acclaimed micropaleontologist, and his students and post-docs. While in Pune, he also visited the Deccan site.

Following the end of the Spring Semester-from May 21-27-UCMP had its fourth annual field trip for graduate students. Co-led by **Seth** Finnegan, Cindy Looy and Ivo **Duijnstee**, the group explored some of the geological and paleontological wonders of the Basin & Range along U.S. Route 50 in Nevada and western Utah. Traveling in four four-wheeldrive SUVs, the group learned about Pleistocene Lake Lahontan: visited a diatomite mine south of Hazen to look for stickleback fish fossils; discovered leaf impressions representing the famous Buffalo Canyon Flora; toured the visitor center quarry at Berlin-Ichthyosaur State Park; paid a visit to the Hickison Petroglyph Recreation Area; checked out a road cut exposure of the Carboniferous Ely Limestone; explored the Cambrian rocks of Marjum Canyon in the House Range, Utah; and took a close look at the rocks and fossils contained within the Ordovician House Limestone. Wah Wah Limestone, Juab Limestone and Kanosh Shale. Read the full story and see more photos online at www. ucmp.berkeley.edu/about/ucmpnews. (Thanks to **David K. Smith** for this contribution)





On April 22, 2017, the UCMP and Berkeley Natural History Museums provided another outstanding day of fun scientific and educational activities on Cal Day, the annual campus open house. Departments invite prospective students and the greater Berkeley community to explore new and exciting research on campus. It also provides the public and friends of UCMP the opportunity to become Junior paleontologists, see rare fossils and take special tours to check out the inner workings of the UCMP, not normally open to the public.

Our 2017 t-shirts featured a block out style *T. rex* and *Kossmatia*, an ancient ammonite from our collections, illustrated by our very own **David K. Smith** (Get yours at http://www.ucmp. berkeley.edu/support.php).

The crowds of visitors multiplied exponentially as the day went on.

Families enjoyed the activities on display by the BNHM in the Valley Life Sciences courtyard on the second floor. From a live mini kelp forest, to stick bugs, to our Proboscidean fossils, the BNHM offered everyone a peek into the variety of science disciplines here on campus. Our younger friends enjoyed an afternoon of digging for fossils at our Fun with Fossils activity.

This year, UCMP was determined to show that the paleontological sciences are more alive than ever!

The theme for the UCMP was Fascinating Fossils! Charismatic specimens representing the different parts of our collections were on display. These included horned dinosaurs, antlers from ice age megafauna, and even tiny microfossils. Professor Emeritus Bill Clemens, pictured above with a large pachycephalosaur, spent the day inspiring young visitors. Along

with many of the UCMP graduate student volunteers, Bill described how paleontologists at UCMP study the fossils in our collections while drawing connections between the fossils and the larger environmental implications. **Ken Finger** featured microfossils and visitors excitedly examined their elegant symmetry under the









Clockwise from top left: Bill Clemens and Eric Holt staff the dinosaur table in the Fishbowl. Photo credit Lucy Chang. Camilla Souto helps at Fun with Fossils Photo credit Jun Lim. Adiel Klompmaker discusses some gastropod shells. Photo credit Jun Lim. Mackenzie Kirchner-Smith

with Sara ElShafie in the VLSB Courtyard. Photo credit Jun Lim. Charles Marshall at the Selfie Booth. Photo credit Julia Anderson. Dori Contreras in the Fun with Fossils room. Photo credit Lucy Chang.

microscopes. Even our Director Charles Marshall joined in the fun, donning a pair of Megaloceros antlers at the Selfie Station. All in all, it was another successful Cal Day.

# What's New in the Collections

UCMP is now two years into a largescale digitization project focused on fossil marine invertebrates from the eastern Pacific: EPICC. Led by Museum Scientist Erica Clites and Staff Assistant Lillian Pearson, a group of 14 undergraduate students and 4 graduate students (Peter Kloess, Mackenzie Kirchner-Smith, Nick Spano, Susan Tremblay) have cataloged 21,000+ fossil specimens, georeferenced nearly 4000 localities and taken 700+ photographs. Together with our eight museum collaborators listed on epicctcn. org, the EPICC Thematic Collections Network has completed 42% of our specimen digitization, 26% of our specimen photography and 38% of our locality georeferencing. Five museum partners are serving data to biodiversity aggregators such as GBIF and iDigBio.



UCMP 203591, Kelletia kelletii, Pleistocene Epoch, Baja California, Mexico. Photographed by UC Berkeley undergraduate student Costas Soler, copyright UCMP. Check out ucmpdb. berkeley.edu for more images.

The results of this project will be 1.6 million invertebrate specimen records that can be used to study faunal responses to environmental change over 66 million years of Earth's history along the longest continuous coastline in the world.



EPICC TCN participants at our 2016 annual meeting at the Burke Museum in Seattle, WA including UCMP/UC Berkeley alumni Liz Nesbitt ('82), Edward Davis ('05), Jann Vendetti ('09).

We have published several guides on our website, including a guide to labeling marine invertebrate fossils and a guide to photographing marine invertebrates. The EPICC project also involves several UCMP/ UC Berkeley alumni, including Liz Nesbitt (Burke Museum, University of Washington), Edward Davis (University of Oregon) and Jann Vendetti (Natural History Museum of Los Angeles County).

We are very close to launching the first set of EPICC Virtual Field Experience modules, which will reconnect fossil specimens with the field localities where they were collected. **Lisa White** and colleagues at the Paleontological Research Institution are leading this effort. The modules include video footage, Gigapan macro images, photographs of outcrops and other rich sources of data to guide inquiry.

UCB alum Wayne Thompson, now a science teacher in Los Gatos, has been scouting the Santa Cruz County cliffs since the 1980s and made a number of interesting discoveries. The most recent discovery is a walrus ankle bone (astragalus) from the Purisima Formation near Capitola, which Wayne generously donated to UCMP. After some preparation, it became obvious that the bone belongs to the walrus Valenictus - an extinct walrus that had extremely dense bones. Based on skeletons from the San Diego Formation, Valenictus was

"toothless" - lacking all of its teeth aside from the enlarged tusks. Two possible skulls of *Valenictus* from the Purisima Formation may further represent this species, but require further preparation and study. Wayne's fossil is the first confirmable record of the toothless walrus from Northern California and the first from the Purisima Formation, the fossil assemblage which UCMP Research Associate Bobby Boessenecker is documenting. Pliocene marine rocks from California and Baia California have yielded a bizarre fauna including temperate belugas, long snouted 'river dolphins', protogray whales, giant sea cows, a more diverse porpoise fauna including bizarre benthic feeding species, dwarf benthic feeding baleen whales, double-tusked walruses, and of course, Valenictus. This fauna is quite different from modern counterparts, indicating a non-trivial degree of faunal change during the Plio-Pleistocene.



A fossil walrus ankle bone from near Santa Cruz. UCMP research associate Bobby Boessenecker even provided a reconstruction.











Early draft of the McKittrick site reconstruction. Illustration credit Helina Chin. Lisa White and fellow crew members on the JOIDES/Resolution teaching workshop. Photo credit Lisa White.

# **McKittrick Project**

With funding from the Institute of Museum and Library Services (IMLS), the UCMP recently completed rehousing the largely vertebrate fossil collection from the McKittrick tar seeps of the Central Valley. Most of the collections were made during UCMP excavations between 1921 and 1927, with additional collections in the mid-1940s by John C. Merriam. The fossils were mostly stored in the Campanile bell tower and lay uncatalogued for more than 75 years.

Over the past two years, more than 13,000 specimens from the McKittrick collection have been identified, cataloged, and digitized by Pat Holroyd, with a team of student assistants working under her supervision This collection, of special value to California - the McKittrick site near Bakersfield is a historical landmark - is now the subject of a series of education modules that will soon be available on the UCMP website. The materials will offer a variety of interactive experiences for young audiences including a McKittrick-area site reconstruction, an interactive Pleistocene food web, and the "Great McKittrick Fossil Find" - an anatomical puzzle challenge using authentic fossils from the site.

#### School of Rock

What do you call 20 educators from 6 states, 3 countries, sailing for 17 days in the Pacific Ocean from the Philippine Sea to the Great Barrier Reef? An International Ocean Discovery Program (IODP) School of Rock expedition! **Lisa White** was part of a team of instructors co-leading an oceanography workshop onboard

a unique floating laboratory, the JOIDES/Resolution (JR). Designed to recover sedimentary cores from water depths as deep as 4 miles, results from the ship's scientific expeditions have contributed much of what we know about the deep time record of the oceans.

For these reasons the ship was an ideal venue to host the unique training and professional development workshop aimed specifically at scientists and secondary educators from communities that remain poorly represented in the geosciences. During the 17 day transit, pairs of early career scientists and high school earth science teachers were introduced to cutting edge ocean science, pedagogical tools, and mentoring strategies for diverse high school and undergraduate audiences. Lisa is a veteran of several IODP cruises, having sailed previously on the JR as a shipboard scientist/diatom micropaleontologist. With opportunities available to teachers to experience first-hand the science capabilities on the ship, communicating science is even more authentic.

# iDigBio Workshop at UC Berkeley

The generation, mobilization, and research use of digital data in the biodiversity sciences is continuing to increase at a rapid pace. This is especially true for paleontology. Within the last half decade of NSF ADBC (Advancing Digitization of Biodiversity Collections) funding, paleo-related Thematic Collections Network projects have been awarded

during four of the six annual award cycles. These collaborations have spurred intense activity in the paleontological community, led to the establishment of the iDigBio Paleo Data and Digitization Working Group, fostered several TCN and iDigBio-sponsored paleo-focused digitization workshops, engendered high levels of community participation, and resulted in an important focus on the uses of digital data in paleontological research.

On March 26-27, 2017 about 60 vertebrate and invertebrate paleontologists, including faculty curators, collections managers, informatics professionals, and approximately 15 graduate students gathered at the UCMP in Berkeley for iDigBio's fourth paleo-related workshop. Dubbed "Digital Data in Paleontological Research" the workshop's primary goal was to carry participants beyond digitization and into methods and issues in using the digital data that the community is producing. Visit https://www.idigbio. org/wiki/index.php/Digital\_Data\_in\_ Paleontological Research for more.



Dori Contreras shows iDigBio participants fossil plants.

#### ...continued from Student Awards page 2

Peter Kloess has a new paper in Palaeogeography, Palaeoclimaology, Palaeoecology: Kloess, P. A., & Parham, J. F. (2017). "A specimen based approach to reconstructing the late Neogene seabird communities of California." Palaeogeography, Palaeoclimatology, Palaeoecology, 468, 473-484.

Jun Lim was awarded a graduate fellowship to do research at the Smithsonian NMNH this summer, and he spent part of the summer in the Hawaiian Islands looking at Pacific Piperaceae. Jun and Charles recently published a paper on the Hawaiian archipelago: Lim, Jun Y., and Marshall, Charles R., "The true tempo of evolutionary radiation and decline revealed on the Hawaiian archipelago." Nature 543 (7647) 2017: 710-7.

**Tesla Monson** is happy to report that she finished her PhD (on *The Sequence of Postcanine Tooth Eruption in Mammals*) in May and she will remain at UCB during the 2017-18 academic year as a postdoctoral researcher and lecturer.

Camilla Souto was invited to participate in the 2017 Bodega Applied Phylogenetics Workshop, offered by UC Davis and held at the Bodega Marine Lab. The workshop discussed topics in statistical Phylogenetics, and had 10 instructors and 33 students from all over the world. During the workshop she used her Cancer crabs' dataset but will also apply what she's learned to her echinoid dataset.

UCMP alum and Virginia Tech Assistant Professor **Sterling Nesbitt** has been awarded the Donath Medal (Young Scientist Award) from the



Tesla is PhinisheD!

Geological Society of America. He will receive the award at the GSA Annual Meeting in Seattle in October 2017.

Postdoctoral scholar **Adiel Klompmaker** recently received
a Paleontological Society Arthur
James Boucot research grant for
early career (postdocs and assistant
professors) for field work in Cyprus
and collection-based research in the
Netherlands, Austria, and Florida.

### Friends of UCMP

We would like to welcome the following new or renewing members to our Friends of the UCMP!

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New Renewal

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# Thanks for your support!

UCMP participated in the Berkeley Crowdfunding Initiative earlier this year in February.

Our See-Through Dinosaur Skull project received enough funding to perform the CT scan, the most important part of the research project!

Thanks again and Shout-Out to the following donors for their support!

## Thanks to:

Elaine Bernal **Thibaut Brunet** Helina Chin Douglas Clarke William Clemens **Erica Clites** Mark Goodwin Patricia Holroyd Eric Holt Randall Irmis Rebecca Jabbour Natasha Johnson Uwe Krause Teresa Lau Constance Milbrath Jason Schein Tammy Spath **Carol Spencer** Allison Stegner Linda Thanukos **Gretchen Trupiano** Sarah Tulga Lisa White **Gregory Wilson** 

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